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ABSTRACT

After reading a passage from a text which explained the deep and surface approaches to learning, ninety Swedish teenagers and adults with varying levels of formal education were asked to discuss their own learning in terms of this distinction. Surprisingly, sixty-one subjects considered both approaches applicable to their own learning. After further questioning, only thirty-three were able to demonstrate that they understood the meaning of both terms. These subjects perceived their approach to learning as being situation-dependent. They were likely to use the deep approach if they were interested in the learning material itself. Surface approaches were typical when studying for tests, participating in an experiment, or in school. The finding that people perceive their strategy to vary over situations is difficult to reconcile with the traditional starting point for research on learning approaches; namely, that learning approaches can be understood in terms of individual psychological characteristics. (CP)

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ABSTRACT

Within the framework of a learning experiment 90 subjects were given opportunity to discuss their own learning in terms of a distinction between two different strategies or approaches (deep and surface learning) emerging from our own previous research. The results reveal that a clear majority of the subjects report that they use different approaches in different situations, and some of the factors which are perceived by the subjects to affect their learning approach are presented. The finding that people perceive their strategy to vary over situations is interesting, since it is difficult to reconcile with the traditional starting point for research into this area, namely that a person's approach to learning can be adequately understood in terms of the psychological characteristics of individuals.

INTRODUCTION

In reviewing the research literature on learning strategies, it can be readily observed that in the descriptions of individual differences in this respect emerging from empirical research, an old and very familiar dichotomy seems to reappear again and again. Indeed, in spite of the differences in research approaches, methodologies, and theoretical orientations there seems to be a considerable degree of consistency as regards the results obtained in much of the research in this field. In saying that a familiar dichotomy reappears, I am of course referring to the fact that there seems to be a relatively close correspondance between the differences in learning strategies found in empirical research today on the one hand and the ones described by Wertheimer (1945) and Katona (1940). Thus, in most studies one of the strategies described usually implies a memorizing and reproductive approach to learning, while the opposite approach usually is described as involving a focussing on understanding of fundamental principles and ideas or on trying to see inner logical relationships in learning tasks so as to increase the meaningfulness of what is to be learned.

In our own previous studies in this field, we have arrived at a description of what we have called two different 'levels of processing' or approaches (Marton 1975, Marton and Säljö 1976 a, b, Säljö 1975) which have a lot common with the strategies described by the two Gestaltpsychologists. The essential difference between these two levels of processing or approaches is that in the one case (surface approach) the learner focusses on learning the text more or less as it stands, i.e. he attempts to transfer the text more or less literally into his head; while in the other case (deep approach) the learner actively tries to understand parts of reality through using books, lectures etc. In the case of deep approach, the learner is somehow aware of the fact that the purpose of learning is to gain an understanding of a problem, phenomenon, event, etc, and in order to do this one reads books, listens to teachers, etc. In this case lecture and books are perceived of as means, effective to this end, while in the case of surface approach the lectures and books <u>are</u> the learning tasks.

The distinction between deep and surface approach emerged as a result of a rather extensive empirical research into student learning. The objective of this research was to describe as carefully as possible the actual methods and procedures utilized by students both in their normal study activities and in controlled learning sessions. As s consequence of this interest, the data-collection took place through in-depth interviews with students on various aspects their learning activities. Working in a different research tradition, consequently utilizing a different methodology, Biggs (1970 a, b, 1973, 1976) has described two different learning strategies which seem to resemble those mentioned above. The main characteristic of what Biggs calls the reproductive strategy is that the learner directs his energies towards "giving back presented material intact" (Biggs 1976, p 70), and more or less pure rote-learning is consequently very common among students using this strategy. The main feature of what is called the transformational strategy on the other hand, is that it implies a more open approach, where personal reflections and interpretations on the part of the student become more prominent and so does e.g. students' attempts of "consciously relating new material to known material" (ibid p 70). The context in which these two strategies have been identified is that of university studies, as was the case in our studies. The data-collection was carried out through questionnaires on study behaviour given to groups of students at various faculties and the results of these questionnaires were subsequently subjected to factor analysis.

Goldman (1972), through a series of interviews with students, reached the conclusion "... that three basic approaches were used in the learning of statistics; a formal algebraic approach, a looser verbal-logical approach, and a rote-memory approach" (ibid p 348). These three strategies were then labelled mathematical formal, logical formal and mnemonic concrete, and the subjects, who were undergraduate students, were asked to indicate which of these three strategies they used. To make it possible for students to classify themselves they were all presented with the following "Strategy Questionnaire".

> "Strategy questionnaire. This questionnaire is designed to investigate some aspects of academic activities that may be related to class performance but are rarely measured.

Strategies: It appears likely that people use different techniques to learn Statistics. Presented below are three possible classifications. Although there may be other ways of classification, check the one that best describes your strategy.

1. Mathematical-Formal: Try to learn algebraic derivation of each statistical technique.

2. Logical-Formal: Try to learn the underlying reasons for the technique in a verbal way.

3. Mnemonic Concrete: Try to learn the computational techniques by observing examples often without worrying about reasons for the technique." (Ibid p 348)

In passing, it could be mentioned that very few students classified themselves as using a mathematical formal strategy when learning Statistics and thus we have got another example of a dichotomy which seems to have a close resemblance to the previous ones. Furthermore, in a series of subsequent studies using a more conventional questionnaire on study strategies Goldman and collaborators (e.g. Goldman and Warren 1973, Goldman and Hudson 1973) have again found differences between groups of students in terms of whether they adopt a 'memorizing' strategy or a more 'verbal-logical' one.

Adding these studies together, an interesting picture emerges. Thus, it seems fairly obvious that differences in learning strategies do exist. Furthermore, it seems quite clear that there is at least some correspondance between researchers as to the nature of the differences between strategies or approaches since in many studies "one strategy is more organizing and transformational in relation to the subject matter while the other is more memorizing and reproductive" (Svensson 1976, p 35). It is to be observed that this similarity in meaning with respect to the various learning strategies has been achieved in spite of the fact that the research approaches in terms of both theory and methodology have been quite disparate.

While it thus seems quite reasonable to assume that there are differences in learning strategies, the interesting question from the pedagogical point of view, of course, concerns the significance of these differences. Without going to deeply into this question, it could be noted that in

the research briefly reviewed here it has been found that the strategy or approach a person uses seems to be related to his performance in very interesting ways. Goldman's (1972) results e.g. show that "the choice of a logical or mnemonic learning strategy did indeed affect performance on the academic criteria which were studied" (ibid, p 351). The students using a Logical Formal strategy showed superior performance on a number of different criteria and furthermore "the elimination of ability differences between the strategy groups (...) did not diminish the difference in adacemic performance ..." (ibid, p 351). Goldman and collaborators in the two studies mentioned above have investigated the relationship between strategy and performance in various subject matter areas and their results seem to indicate significent differences between areas in terms of this relationship. This latter kind of research has also been carried out by Biggs, who in his studies mentioned above has found that strategy accounts for a considerable amount of the variance in the criterion both in the Sciences and in the Arts.

Similarly, in our own research into the differences in performance between students using a deep and students using a surface approach, we have found some interesting and rather consistent results. Thus, in experimental contexts we have found that people using a deep approach seem to achieve results which are better from a quantitative point of view (number of questions answered correctly) on short- and long-term retention tests as well as from a qualitative (e.g. grasping the fundamental ideas and principles in texts) one (Marton and Säljö 1976 a, b, Dahlgren 1975, Säljö 1975). Furthermore, it has been shown that people using a deep approach can cope with structural differences in written materials more efficiently than people using a surface approach. Thus, Svensson (1976) found that subjects with a deep approach were more successful in handling the fact-conclusion relationship in a text. Also Marton and Säljö (1978) in a similar fashion found that people using this approach were more successful in handling the principle-example relationship in a rather complicated text. Outside the learning experiment, Svensson (1976, 1978) made a very careful analysis of the study success of students using either a deep approach or a surface approach. Svensson's study shows that there is a clear relationship between approach and performance in the sense that people using a deep approach (or in his case a holistic approach) achieve a better result although there are variations between different fields of study. Perhaps even more interesting is, however, that Svensson points to signi-

ficant indirect effects of approach. Among other things he found that students using a surface (or atomistic) approach were less successful in their studies not merely because they used this approach, but, as his results also indicate, the very fact that they use this approach leads to a decrease in the time and energy devoted to study. Thus, it appears that there may be "an indirect relation between approach and academic achievement in that the development of patterns of study was related to the approach in learning" (Svensson 1976, p 14).

The purpose of the present study is to continue the research into learning approaches or strategies by having students' reactions to such differences described in research. Thus, the interest was to find out whether students would recognize in this case the distinction between a deep approach and a surface approach and secondly in what category they would place themselves. However, an interesting feature of the present study is that this aim of making students respond to the distinction in learning approach was achieved through a very indirect procedure. Thus, this distinction was introduced in a text given to a group of students in the context of a learning experiment. Consequently, the students first had to learn about the differences in strategies and subsequently answer a number of questions covering the content of the text. As will be shown, this procedure had the considerable advantage of allowing for a check of the meaning of the statements given by the students in characterizing their own learning at a later stage in the session.

METHOD

The data which will be presented here emanates from a rather extensive study on how people learn from normal written materials (cf previous articles in this series, Säljö 1979a, b and Marton and Säljö 1979). The study was divided into several different steps.

1. The introductory phase consisted of an interview with the participating students on various aspects of their learning. This initial interview lasted for approximately half an hour.

2. The reading of a text (briefly described below).

3. Summarizing the main point of the text and free recall of the text. After this, the participants were asked a number of questions on how they set about learning in this particular experimental situation (process-questions). Following this there was a set of questions on the content of the text.

4. A concluding interview on the experience of the situation and of the process of learning.

5. As a last point, the participants were required to take two standardized tests, a vocabulary test and Raven's progressive matrices.

Owing to this design, which among other things allowed students to decide on how much time they needed for reading and answering the standardized tests, there are great interindividual differences with respect to the duration of the experiment. Thus, the range is from slightly more than two hours up to four hours. However, in the present study there is no need for going into great detail concerning the entire experiment. The data which will be reported here on students' reactions to descriptions of differences in learning approaches emanate from the activities described in points 3, 4 and 5 in the list above.

Finally, it should be noted that the entire experiment was run through individually with each subject and that all communication between the interviewer and the interviewee was tape-recorded. The data analysis was subsequently carried out on the transcripts.

Subjects

There were 90 students participating in this study. They were chosen so as to represent groups which were as heterogeneous as possible with respect to age and previous educational experience. The variation in age between subjects was from 15 years and 7 months to 73 years and 3 months. With respect to level of formal education, there were three different groups: short, 6-9 years; intermediate, 12 years; high with a level of formal education of at least 14 years. The subjects were volunteers recruited individually over the telephone. They were paid for their participation.

The text

The text used in the experiment is a 7 1/2-pages (3,752 words) introductory text on learning used in a reader. It is divided into three main sections. The first of these sections (850 words) deals with classical conditioning, the second (550 words) with instrumental conditioning and, finally, the third one, which is the one of interest here, presents our previous research on learning approaches or strategies. Here the concepts of deep and surface approach are introduced and explained. The explanation of the difference consists both of a general description and of a few excerpts from interviews with previous students belonging to either of these categories. Following this there is a presentation of differences in the outcome of learning which are related to the difference in approach. Thus, the idea was that the subjects should first learn about the differences in learning strategies and subsequently answer a number of questions. Finally, they would be required to discuss and describe their own learning in the perspective outlined in this text.

Procedure

The main data source in this report are the comments given by the participants on point 4 above, i.e. in the concluding interview. However, several subjects spontaneously started making comparisons between the learning approaches described in the text and their own way of learning already at point 3, i.e. in the brief questioning on the experiences of learning in this experimental situation (the so-called process-questions). In these cases, the subjects were encouraged by the interviewer to develop this comparison.

The very last point of the concluding interview, however, cortained a set of explicit questions concerning the relationship between the student's own approach to learning and the distinction described in the text between a deep and a surface approach. These questions were introduced to the subjects in the following way.

> "Among other things, the text you have just read was about people who were taking part in an experiment where they had to read a text in very much the same way as you have done here today. The author of this text, i.e. the one you have just read, tried to describe how a number of research subjects set about learning in the experiment which the text presented. Do you think that there is anything that is applicable to the way in which you learn? I mean, as you were today or as you normally go about it?

To be on the safe side, however, the interviewer also repeated the main point of the description of learning approaches immediately after this.

> "Perhaps you do not remember all of what was said in the text. According to the author, there were some persons who while learning focus their attention on the very words of the text they were reading and in a way tried to get the text as such into their heads. Other people, on the other hand concentrated more on trying to find out what was behind or beyond the text, i.e. they were trying to figure out what it was all about. They were the ones who tried to understand, instead of attempting to memorize the text. Do you think that one or the other of these approaches is applicable to the way in which you learn? I mean, both today and in your more normal learning when you are reading books and other things?"1)

After this followed a dialogue where the interviewer tried to elicit as much information as possible about the students' perceptions of their own approach in relation to the descriptions in the text serving as learning material.

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1) In the quotations from many subjects given below only this second part of the introduction will be given. This is done simply to save space.

RESULTS

In the students' descriptions of their own learning in the perspective outlined in the text, several interesting observations can be made, some of which might be seen as throwing new light on the whole problem area of learning approaches or strategies. At a general level, a vast majority of the subjects claimed that they recognized the distinction between a surface and a deep approach and that they furthermore could apply it in analysing their own learning. Several subjects also said that somehow they had intuitively known about this distinction even before they read about it in the text.

In a similar fashion there were many subjects who started to analyse e.g. fellow students in terms of these two approaches, the demands of upper secondary school as compared to the university in terms of the learning approach encouraged, etc. However, in spite of what thus seems to be a relatively high 'face validity' of the distinction, there are, as will be illustrated below, several important and difficult problems involved in the present study. In particular, it is obvious that in spite of the very explicit explanations of the meaning of the two learning strategies, it turns out that the terms deep and surface approach are used by many subjects with a meaning which is very different from the one presented in the text and in the oral explanation. However, this problem will be dealt with below.

Starting at a general level, there are 72 subjects, corresponding to 80%, who say they can classify themselves in the perspective outlined in the text. The remaining 18 subjects consequently do not relate their own approach to learning to this description in spite of rather intensive prompting from the interviewer. Before going any further, it might be of interest to give a brief picture of how these 18 subjects reacted to the explicit requirement of relating their own learning to the description in terms of a deep and a surface approach.

Among these 18 subjects there are essentially two reactions at this stage. The first of these is that the subject does not understand the description of the learning strategies and/or the differences between them. The following quotation illustrates very clearly the difficulties of understanding the distinction between the two approaches that some subjects had in spite of the fact that on reaching point 4 in the expe-

riment they had already read about the distinction and answered several questions on it.

"E: ... well, according to the author there were some subjects who, as it were, concentrated on the very words of the text they were reading. They tried more or less to get the text into their heads as it was, other subjects were more concentrated on what was behind the text, i.e. what it was all really about. They tried to think things out instead of trying to remember directly what was said in the text. Now, do you think that you use one or the other of these methods when you study normally?

S: That was difficult ... could you take it once again?

E: Yes, it's a bit complicated this ... well, according to what this author said about these people ... some of them so as to say focussed on the very words they were reading in the text ... They tried to get the text into their heads, they learnt it exactly as it was written. Others concentrated more on what it was all about, what was behind the text. They tried to think things out; how did it all get like this and so on instead of merely memorizing what was in the text. Do you think that you use one or the other of these ways when you study?

S: No, I can't ... I don't understand what you mean.

E: You don't understand what I mean?

S: ... no ...

E: Well, it isn't all that simple. I mean, if you are going to learn something then you can sort of ... in general, you have a book or something like that when you are studying, then you can sort of memorize the text, I mean, you can learn the text as it stands ... do you see?

S: ... well ... sort of rattle it off ...

E: Yes, well I don't mean that you learn it all by heart, but you can try to memorize it more or less as it stands ...

S. ... yes ...

E: ... on the other hand you can sort of try to understand the meaning of it all, e.g. <u>why</u> things have got like they are, and perhaps you can sort of get behind the text and somehow try to penetrate into it, because, after all, the way which they have described it in the book, that's only <u>one</u> way of doing it. Perhaps it could be described in many different ways ... I mean, thinking about History and ....

S: ... hm ... yes ...

E: When you are learning ... when you are studying, do you think you pay attention to and try to learn what's in the book exactly in that way ... I mean, do you concentrate on the very text in itself or do you try to think what it really is all about ... do you try to get behind the exact wording?

S: ... yes ... well, I don't know ...

E: Do you think it's difficult?

S: Yes, well, I can't really see ... you mean if you are reading ... no, I can't answer your question ... I don't see what you mean ..."

(Subject 59)

While this subject thus never manages to understand the distinction, the second type of answer given by some of these 18 subjects here implies that they claim to have understood the distinction, but they still cannot relate their own learning to the description in the text. However, there are only few subjects who say this and even in some of these cases one might argue that they evidently have some difficulties in understanding this distinction.

In continuing our analysis of the 72 subjects who classified themselves according to the distinction between a deep and a surface approach, some very interesting results occur. Perhaps the most surprising one is the finding that no less than 61 subjects state that they adopt both of these approaches. Thus, as can be seen from table 1, there are only 11 subjects describing themselves as belonging more or less exclusively to one or the other of the approaches.

Table 1
Classifications by subjects on their own approach to learning.

	deep	surface	both	total
number of subjects	4	7	61	72
per cent	6	10	85	

In view of much of the previous research on learning approaches or strategies, where the assumption in most cases is that people adopt one particular approach or have a certain style of learning, the finding that 61 of 72 subjects classify themselves as belonging to both approaches, must be considered very surprising, but also very interesting. This high figure becomes even more unexpected if one considers the nature of the question given in the second part of the introduction to point 4 ('Do you think that one or the other of these approaches is applicable in your case?') and which thus forms the context immediately previous to the description given by most subjects. As can be seen from the formulation of this question the subjects are rather straightforwardly required to place themselves in one of the two categories and yet a clear majority claim that they belong to both.

A natural consequence of this finding is, of course, to continue the

analysis to find out in what sense and in what contexts subjects claim that they use one or the other of these approaches. Before going into this intriguing question, however, an illustration will be given of what might be considered as typical reactions by these 61 subjects.

"E: ... but, I think that according to this author there were some subjects who sort of concentrated on the very words of the text ... which they stuff into their heads, I mean virtually tried to get it inside in a concrete sense. Others concentrated more on what was behind the text, what it was all about as it were and they tried to think things out instead of straining their memory all the time. Do you think that one or the other of these ways of working or reading, studying, can be applied to you?

S: I don't think you are one hundred per cent consistent as a person. So it all depends on the degree of interest how much of the context you understand and how actively you read, but there are sort of always ... it can happen that there is something that you are interested in in principle, but you may be tired or something ... so you don't really feel like studying, but you have to ... Then this more memorizing way of reading can be the way ..."
(Subject 54)

"E: This text was, among other things, about research subjects who were taking part in an experiment where they had to read a text very much in the same way you have done here today. The author of the text you have just read tried to describe how these research subjects set about learning in the experiment which the text presented. Do you think there was anything applicable to the way in which you learn? As you were today or as you normally function?

S: Well ... I'm sure there is ... I suppose you function ... I'd say that you function in both ways, depending on what kind of texts I am reading ...

E: Yes, how?

S: Some of them interest me quite simply, and some texts I read just because i am trying to pick up a few things of this and that so that I can show that I have read that particular piece ... I mean, in a written text later on ...

E: Well, according to this author there were some people who concentrated on the very words of the text. They tried to get the text into their heads, while others tried to ... they concentrated more on what was behind the text, i.e. what it was all about and they tried to work things out ...

S: I don't think that's the whole truth, because I think that a person functions in both ways.

E: What makes people function in one or the other way, then?

S: Well, it depends on whether the text is written ... yes, well, partly if it's written simply and partly if it's written so that it interests me. It could be that it is something which is of real interest to me, I mean, one tends to assume that if one is studying Social Politics, for example, then I am really interested in it, but certain parts of it I only study because I have to learn it and be able to show it in writing ... Anyway, I think that one reads in both ways. I don't think a person <u>always</u> reads in a surface manner or <u>always</u> is interested and reads in a deep way."
(Subject 20)

In continuing the analysis, it became obvious, however, that also among the 61 subjects, who described their own learning in accordance with the perspective outlined, there existed rather large variations in the meanings in which the terms were used. In particular, the concept of deep approach was used with very different meanings, while the concept of surface approach was obviously easier to understand. Without going too deeply into this matter here, it can be mentioned that several subjects equated the distinction between deep and surface approach with, for instance, a distinction between reading or learning carefully versus reading or learning carelessly. In other cases, the essential difference between a deep and a surface approach was considered to consist of whether people managed to learn much when confronted with a text or whether they only succeeded in retaining a few details. Thus, it was found that many subjects used the terminology of deep and surface, but they used it with quite a different meaning.

The kind of distortions mentioned here are in themselves quite interesting, since they seem to be rather clearcut cases of a phenomenon that we previously have named 'horizontalization'. In an earlier article in this series Marton and Säljö (1979) describe horizontalization as "... the process through which the reader gives the vertical dimension an axial turn, representing different levels of depth in the text in terms of serial ordering." Thus, the essence of this phenomenon is that in learning people often reduce the complexity of the principles, ideas or phenomena that they are confronted with by e.g. substituting a qualitative difference (such as the one between deep and surface approach) for a quantitative one (such as equating it with a difference between learning more or less carefully).

Returning to our main question, it is, of course, extremely interesting to make a detailed analysis of what subjects mean when they claim that they are using both approaches. However, the variation in meaning in using particularly the concept of deep approach makes further such analysis quite difficult. To make sure of obtaining a reasonably homogeneous meaning and one which also corresponds to the distinction described in the text and in the oral description, it was decided to use some of the content questions given in phase 3 of the experiment as a control. The idea behind this is that only those who can adequately account for the meaning of the two appraches will be used in carrying the analysis further.

Among the 28 questions given in the retention test, there are in all 7 which in one way or another deal with the distinction between deep and surface approach. However, most of these 7 questions deal not with the distinction itself, but rather with e.g. the consequences of the two approaches, the reasons underlying them, etc. In any case, there are two questions which clearly require students to deal with the distinction itself and which are suitable for our purposes. In the first of these questions the requirement is to identify these two approaches. In the second case the subjects are required to elaborate on what obviously was the most difficult part of the distinction, namely the idea of qualitative differences in the outcome of learning. The questions were the following:

19. Some are better at learning and others are not so good. According to the text, what are the differences between those who are good at learning and those who are not, when they have all read the same text?

21. What is meant by the statement: What is learned "can vary in a vertical dimension"?

Question number 21 in particular proved to be rather difficult for many subjects as can be seen from table 2 where the proportion of correct answers are indicated (the answers were judged according to a 1/0-pattern).

Table 2

Proportion of correct answers on question 19 and 21.

	no of subjects	proportion of correct answers no 19	no 21
whole group	90	80	46
self-classified as both deep and surface	61	84	57
Self-classified as either deep or surface	11	55	55

There is no reason for going into detail about this table. It is sufficient to say that judging from the results of this table, there are obviously rather big difficulties in understanding the meaning of parti-

cularly idea of qualitative differences in the outcome of learning judging from the rather low percentage of correct answers to question 21. It can be mentioned that the requirement for a correct answer was rather moderate. At a minimum, the answers should contain some kind of a clarification of the qualitative nature of the differences in the outcome of learning. This classification could be given in general terms or by means of examples. However, what is important to note here is that failure to give an adequate answer to this question makes it douptful whether, primarily, the concept of deep approach had been understood. What is learned when one is using a surface or memorizing approach obviously seemed rather evident to almost all the subjects. The difficulty arose when they were required to single out the nature of what is learned in the case of a deep approach. The reason for using this question as a criterion is precisely this that it forces the subjects to at least hint at the nature of this difference between the two approaches. Thus, there are good reasons to assume that those who managed to answer this question had a reasonably good grasp of the difference between a deep and a surface approach, at least in relation to the explanation given in the text read.

On account of those difficulties in understanding, it was decided that in carrying the analysis further, only those subject who answered both these two questions correctly would be included. This is thus a rather strict criterion which probably excluded quite a number of subjects who understood the distinction. However, this problem is not of decisive importance here, since our interest lies in finding out about the meaning of the statement made by the subjects, namely that they apply both a deep and a surface approach in learning. Achieving what can be considered as an adequate degree of certainty with respect to the meaning in which these concept are used is clearly much more importan. than including as many subjects as possible in the analysis.

Anyway, there are 33 subjects who claim that both approaches fit their way of learning and who at the same time demonstrate that they have a basic understanding of the meaning of them. The accounts of these 33 subjects will now be considered in some detail.

In essence, these 33 subjects claim that they use these strategies in different situations. Thus, their claim is that as situations (in a wide sense) change, they also change their approach to learning in terms of the perspective outlined. What is of interest here is then, of course, to consider the nature of the factors perceived by the subjects to influence their approach to learning.

The quotations given on page 13 to illustrate the finding that the majority of the subjects perceive themselves as using both approaches are examples of one factor or rather a set of factors which are mentioned by many subjects as influencing their approach, namely the interest in the learning material itself. Thus a high level of interest is in most cases perceived lead to a deep approach, while a low interest results in a surface approach, i.e. in memorizing the text. The following two subjects are other examples of this view.

"E: ...according to this author there were some research subjects who concentrated on the very words of the text and they tried to, so as to say, get the text into their heads. Other subjects concentrated on what was behind the text, i.e. what it was all about. They tried to work things out instead of only memorizing. Do you think that one or the other of these ways is applicable to the way in which you learn? As you were today or as you normally function?
S: It's a bit difficult to say. I don't think you function in either of these ways. Rather, I think it's something in between ... I mean, sometimes you function in one way and sometimes in the other. It all depends on the content of the text and it is ... what I think about it, I mean, if it seems interesting ... Anyway, it's hard to be general about this ...
E: I see. How does this affect you?
S: If I were to find it interesting, then I would try to get behind the text, and try to find out what it is all about, and try to associate with other things ... while sometimes one reads just to remember certain words and such ...
E: More of the surface side then?
S: Yes ..."
(Subject 61)

"S: I mean, I sort of recognize myself in these cases, in these different types of answers when they had been reading a text and some answered like this and others like that ... It all depends on the situation and the interest that you have in the text. If you are not in any way interested in a text, then you tend to just memorize it, you don't think through what it really is about, but you just learn it by heart without knowing what it really is that you ..."

Not being genuinely interested in the contents of what you read but rather reading it for what could perhaps be called instrumental reasons it thus perceived as resulting in surface learning. However, although these two subjects in these particular excerpts talk about interest in quite a general sense, it is obvious both in other comments made by these two subjects as well as in comments made by most of the other subjects that this kind of combination (i.e. perceiving something as not interesting or relevant from the point of view of content but still learning it) occurs primarily in the context of schooling. In fact, to summarize all the comments given one could say that according to the subjects there are a number of factors in the teaching and learning situation which are perceived by students as encouraging a surface approach to learning or in some cases even making it necessary. In other words, a surface approach to learning is to a large extent perceived as a consequence of the educational situation in itself.

There is, of course, some variation between subjects with respect to what factors in this context are the main contributing causes for adopting a surface approach. However, most of the 33 subjects point to the decisive influence of the achievement tests. Thus many subjects perceive the activity of reading and learning because you want to find out something on the one hand and the activity of reading and learning for a test on the other as two clearly distinct activities. Just as in the first case a deep approach is considered to be a natural way of learning, the surface approach becomes natural in the second case. The following two quotations illustrate this difference quite clearly.

"E: Was there anything else you recognized?
S: Yes, the thing about that you can read either to merely try to learn what it says or you can read in order to learn something about the whole thing, I mean, not just what is written ...
E: From where did you recognize that?
S: Yes, well, from how you go about reading for test, and how you read newspapers, sort of ... it's quite different ...
E: In what sense ...?
S: When you are reading newspapers you are reading in order to find out about a lot of things ... When you are reading for the tests you are simply reading for the test ...
E: What is the most efficient way of reading do you think?
S: It depends on why you read. To get good results in a test I think you have to read in such a way that you read exactly what it says and not in any way deeper, because the aim of most of the tests you should answer exactly as it is written ... but then to really learn something you have to read in a deeper way, you have to read between the lines, so as to speak ..."
(Subject 18)

"E: This text is, among other things, about research subjects who were taking part in an experiment where they had to read a text very much in the same way as you have been doing here today. The author of the text you have just read tried to describe how research subjects functioned in the experiment which was presented in the text ... and to a certain extent we have talked about this already ... Do you think that there was anyting which was applicable to the way in which you learn? As you were today or as you normally function.

S: Yes, I think so. I think that it's a matter of both/and ... one can be said to belong to both these categories depending on how you go about reading ... Sometimes I read, even if I don't want to, in the way that you more superficially learn the text, the text as such ...

E: How do you mean, That you memorize it ...?

S: Yes, that's right. There are occasions when you go about it like that.

E: Why is that?

S: I would suspect that you do do it in situations where you think that you might need this text, but when you are not particularly interested in the content of the text ...

E: Yes ... well, when can you run into ...?

S: For example when you have a text in front of you which isn't of any interest to you at all, while on the other hand this second approach to reading is the one which you normally want to make use of when reading. That's the way you read when you are really interested in the content as such ... you read something for the sake of the content and to get something out of the content ..."
(Subject 24)

As a matter of fact, the subjects are quite unanimous in identifying a surface approach as a likely way to set about learning for tests. The following comments from a subject illustrate a point which in a way seems to lie behind many of the comments given by the subjects. In essence, what she is saying is that during her normal studies she attempts to go about learning in accordance with the deep approach, but when it is time for the achievement tests one has to go back to memorizing.

"S: ... that does't seem totally unfamiliar and this goes for that last part too ... that you should penetrate into a text and discuss with yourself about the content and draw some conslusions. I mean, it's true that you have heard that that's the way to go about learning ...

E: Where have you heard that?

S: Yes, well, I think I've seen it when I read a few pamphlets and so on ... on different occasions at school ... they gave you a few sheets of paper where they told you how to go about learning.

E: Is that the way you usually function?

S: Well, I think it's a bit of a combination. Before the various tests I guess one tries to put more emphasis on a mechanical learning, while during the usual study periods one reads in that second way. I mean, one tries to discuss a little with oneself and penetrate into the text ... So, I guess one uses both these ways of learning."
(Subject 22)

There are, of course, a number of other factors in the teaching and learning environment which are perceived by the subjects as promoting a surface approach. Several subjects mention the lack of time or the amount of learning material which one has to deal with during a course or a term. It is also fairly common to consider one or the other of these approaches as being more or less appropriate for different subject matter areas. However, there is very little inter-subject agreement on the relationship between approach and subject matter. Thus, some hold a memorizing approach as being a necessity in the Sciences while in the Humanities and the Social Sciences it is more natural to behave in accordance with the deep approach. On the other hand, there are exemples of statements which are exactly in the opposite direction.

Another interesting remark made by several of the subjects concern the influence of various educational contexts or milieus on the approach to learning. Among those who had an academic training, there is wide agreement on the fact that the teaching and learning situation in the Social Sciences and related fields at university contain less pressure towards a surface approach than for example most of the teaching at upper secondary school (cf Säljö 1979c). In fact, only one of the university graduates claimed the opposite, i.e. that the university contains more pressure towards a surface approach.

However, there is no need for carrying the analysis of what factors in the teaching and learning situation that are seen to influence the approach to learning further. For our present purposes it is sufficient to observe that, according to the subjects, their approach to learning is affected by a number of conditions in the learning situation and its immediate context. Before discussing the significance of this finding for research on learning strategies, one further observation on the importance of the learning context in determining the approach to learning will be reported.

During the two interviews, many of the subjects commented on their learning in this very special experimental situation both spontaneously and in response to the so called process-questions, i.e. the questions given to make the subjects describe as accurately as possible how they actually set about learning. A significant feature of most of these comments is that the experimental situation in itself is yet another example of a

situation where one adopts fairly easily a very memorizing learning strategy. Consider the following two quotations, which very clearly make this point:

"E: Was there anything you recognized?
S: Yes, I thought about myself in relation to all this ... and then it struck me that I am trying to sort of, well, to do it so that I will be able to tell you about it, I'm trying to remember what it says, on the surface of it, just like that ... except for this last part. I think that ... it was so difficult to recall all of it in detail, so I sort of didn't have the energy to learn it.
E: No ... When you say that you recognized yourself, were you then thinking of this last part ...?
S: Yes.
E: In what sense did you recognize yourself?
S: Well, I was thinking that here I am sitting and trying to memorize all of this, to learn it by heart, that is this surface way here, but I don't know if that's really the right way to do it, but ...
E: Hmm ... Then you agree with what was said here?
S: Yes.
E: This other approach to learning, which the text presented, do you recognize that too?
S: Yes, I think I do, although perhaps not here in these particular circumstances, because it's so special, but otherwise when I read in other situations I try to relate to the experiences I have ..." (Subject 16)

"E: Among other things, this text was about people who were taking part in an experiment where they had to read a text very much in the same way as you have been doing here today. The author of the text you have read tried to describe how these research subjects set about learning in the experiment which the text dealt with. Do you think that there was anything which was applicable to the way in which you learn? As you were today or as you function normally?
S: Yes, I think there is ...
E: In what sense?
S: To start with ... if you are in an experiment like this, I think that it sort of just happens that you merely try to add a little memorized picture of the text to ... you see ...
E: Hmm. How come?
S: I think it has a lot to do with the fact that ... well, your are nervous och then you do that kind of thing ... I think ..." (Subject 47)

Even subjects who report themselves as having once and for all decided never to use a memorizing strategy when learning claim that it is very easy to fall back into this behaviour in an experimental situation. Summarizing the comments, one finds many reasons for this. However, they all

seem to involve two different facets of the experiment: the strong inclination on the part of most subjects to perform well, i.e. to be 'good' subjects and the uncertainty of what the experiment was all about and, consequently, what kinds of questions and tasks they would be required to go through after the learning phase. Furthermore, one piece of information which was given before the reading of the text was that the subjects would be required to recall the text afterwards. The awareness of this task obviously further amplified the tendency to try to memorize the text. This comment was made by many and the following two quotations are illustrations of this.

"E: According to this author, there were some research subjects who so as to speak concentrated on the very words of the text and they tried to get the text as such into their heads. Other subjects concentrated more on what was behind the text, i.e. what it was all about. They tried to work things out instead of attempting to memorize as it was said here ... Do you think that one or the other of these approaches is the same as your way of learning?
S: Yes, normally it's most often the case that I read and try to think about it all, what's behind it and so on instead of memorizing it ...
E: Hmm. And today ...?
S: Yes, today it was more a question of memorizing, but I failed ...
E: Why is that?
S: I guess it was because I had to recall it afterwards, sort of be prepared to do that ..."
(Subject 81)

"E: Do you have a feeling that you set about learning differently when you are learning on your own?
S: Yes, I think I do.
E: In what way?
S: Well, I sort of take it easier and I revise and ... you don't have to read the text so quickly. Rather you can go through a paragraph and sort of reflect on it: What is this all about really? ... Yes, well, in that way it is much easier to find out what it's all about.
E: Were you more tense than you usually are when you read?
S: No ... I guess I wasn't.
E: This thing about having to recall the text afterwards, did you think about that?
S: Yes.
E: Did it affect you?
S: Yes, I tried to memorize, I wanted to remember <u>this</u> and <u>that</u> and ... of course, that's something you have to do in other situations too, but it is obvoius that you get more anxious when you think about it, perhaps, and then perhaps you forget a lot just because of that ..."
(Subject 37)

Taken together, this would seem to imply that the demand characteristics of this experimental study of learning (and no doubt, many others too) tended to lead to an approach to learning on the part of many of the participants, which was perceived by them as being a typical of their normal way of setting about learning. In other words, subjects claim that in a experimental situation they perceive themselves as proceeding in accordance with a surface approach even though they do not normally consider themselves as doing this, not even in the school centext. This is, of course, a prime example of the difficulty of experimenting with human subjects who are never neutral towards an experimental situation, but instead respond in various ways to the demands they perceive. For our purposes it is, however, interesting to note that an experimental situation in itself seems to have an effect on approach to learning.

DISCUSSION

The results of this study indicate that the learning approaches or strategies described in our own previous research and also in a rather similar way by a number of other researchers seem to have a high face validity. Thus, a clear majority of subjects participating in this study recognise the dichotomy between a deep and a surface approach and they can further more relate their own methods and procedures of learning to this perspective. A surprising result, however, is the finding that very few describe themselves as belonging exclusively to either of these categories. Rather, the general attitude among 61 of the 72 subjects, who described their own learning in the perspective outlined in the text used as learning material, is that they consider both of these approaches to be applicable to their own learning.

In carrying the analysis further, it was found that after taking a step to make sure that the terms deep and surface approach were used with approximately the same meaning, the general result can be summarized by that the subjects perceive their approach to learning as being contextually dependent or, in other words, as situations change the approach also changes. Should this be true in a noumenal sense, it represents a serious problem for most of the research on learning strategies. In this research the tacit assumption has been that learning strategies are inherent qualities of individuals in the sense that various people use various learning strategies.

The task for research has been that of identifying these strategies and establishing which individuals, defined in terms of a number of psychological variables, will use them. However, judging from the results of this study it is doubtful whether this assumption is an appropriate starting point for the study of learning strategies. If people do not perceive themselves as being consistent with respect to their approach to learning then it is probably wise to take this as a serious warning against attempts to predict people's strategies on the basis of their personality, intelligence etc.

If people are not consistent with respect to their approach to learning

over situations, what consequences does this have for research? How can knowledge develop in the light of such results? To start with, it seems as if the very description of differences in learning approaches represents a significant step forward. By using concepts which have been developed through empirical research, we are in a much better position to understand the educational reality. In the present case, this is exemplified by the finding that subjects themselves describe their own learning in terms of deep and surface approach. In this way, significant aspects of the teaching and learning process become thematized, i.e. they are identified and they can be talked about, analyzed, and, in general, they are given a place in our thinking about educational matters. Thus, such concepts become intellectual tools in understanding a part of the surrounding world (cf. Marton, 1978).

What is being argued here is that it seems as if the concepts of deep and surface approach can not be thought of as referring to inherent characteristics or qualities of individuals (cf. e.g. Laurillard, 1978). Nor are they, of course, inherent charateristics or qualities of situations, since this would imply that all students in a particular situation would adopt a certain learning strategy. Rather, it seems most fruitful to assume that they are to be found between a person and a situation. In other words, to talk meaningfully about learning approaches we need to know about both the individual and the learning context (or rather about the individual's perception of this context).

Such a view has important and far-reaching consequences for research. For one thing, it does not deny the possibility that in carrying out research into the field of learning approaches we shall eventually find that some individuals are very stable in terms of their approach to learning. (In fact, there are a number of subjects in the present study who may very well be such consistent cases.) However, this view casts a great deal of doubt on the fact that one can start research with such a presupposition as is generally done. Rather, it should be proven through empirical research that this is in fact the case. Thus, consistency on the part of individuals over situations might emerge as a result, but it cannot properly be considered as a precondition since this would imply an underestimation of the contextual nature of human action.

Thus, in holding the view that to understand the phenomenon of learning strategies we need to take into account both the individual and the learning context, we are in fact arguing for a descriptive approach to research. Following this line of reasoning, research should be reorientated from asking general questions on what kinds of strategies people use when learning and other general questions, to a much more detailed analysis of how people actually set about learning in various contexts, how they perceive those contexts and how their perceptions affect their learning. In other words, we urgently need descriptive studies of the experiential side of learning. At the same time this would be a way of making studies of learning pedagogically more relevant, since in starting from the experiential side a picture will eventually emerge of how the educational setting moulds and affects learning. This is a logical consequence of what might be called the experiential level of description, since people in describing their own learning do relate themselves to the reality they perceive.

Finally. there are of course several shortcomings in the present study. One of these has to do with the selection of the last 33 subjects whose descriptions of learning form the starting point for the latter part of the account of the results. In earlier articles in this series (Säljö 1979a, b, Marton och Säljö 1979) we have argued that there appear to be significant differences between people with respect to their subjective conceptions of learning and that these differences seem to be closely related to the difference between a surface and a deep approach to learning. Thus, for example, the fact that people behave in accordance with a surface approach could be understood as a result of their having a static and quantitative conception of the phenomenon of learning. The results of the present study would seem to contradict this line of reasoning by saying that there are factors in the teaching and learning situation which lead to this approach to learning. However, there is no reason for considering these two statements as contradictory.

As a consequence of the design of this study, the 33 subjects who were included in this latter part of the account of the results all had to show that they had understood the distinction between a deep and a surface approach to learning. However, as was mentioned and briefly illustrated there are subjects who do not understand this difference or who

only understand it very fragmentarily. Now, one could argue that many of these latter subjects may use a surface approach in quite a different sense to the 33 subjects focussed upon here. By knowing that the concept of learning can have different meanings these 33 subjects in a certain sense choose to learn in a particular way in a particular situation. However, in the present material it appears that there are subjects who adopt a surface approach to learning because they have a conception of learning which does not seem to make it possible for them to go about learning in any other way. Their inability to understand the distinction between a deep and a surface approach may in fact be a sign of just this. Thus, there appear to be significant differences of a qualitative nature within the distinction of surface approach to learning.

However, the main point is that to our 33 subjects the approach to learning appears as contextually dependent simply because they are somehow aware of the fact that learning can have different meanings. For others there may not be any room for such contextual influences simply because learning is held to have one fairly obvious meaning which does not differ from one situation to another. However, in both cases people may be held to behave in accordance with their conceptions of learning and one important task of a descriptive psychology is clearly to further our knowlegde of how people develop their ideas of and perspectives on learning, taking into account variations both within and between individuals and situations.

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